

**REMARKS**

Claims 1-11 and 19-27 are now pending in this application. By this response to the non-final Office Action dated October 30, 2007, claims 1-3, 5, and 22-24 are amended, and new claim 27 has been added. Support for the amendments to the claims is found, *inter alia*, at page 3, line 37; page 4, lines 13-14; and page 4, lines 31-33 of the specification as filed. Care has been taken to avoid the introduction of new matter. Favorable reconsideration of the application in light of the following comments is respectfully solicited.

**Rejections Under 35 U.S.C. § 102(b)**

In section 3 of the Office Action, claims 1-11, 20, and 22-26 stand rejected under 35 U.S.C. § 102(b) as being anticipated by PCT Intl. Pub. No. WO 01/48846 (Ballard). Applicants respectfully traverse.

Claim 1 recites, *inter alia*:

plus and minus current extraction sections, . . . each current extraction section comprising a current extraction plate which is fixed to an end cell positioned on an end of the fuel stack so as to extract the generated current, and an end plate . . .

and a passage allowing flow of a fluid, provided for at least one of the current extraction plate and the end plate

The Office Action asserts that the “substantially fluid impermeable plates” disclosed at page 12, lines 15-16 of Ballard (also referred to as “separator plates” (page 13, line 16), with some species being “coolant flow field plates” (page 13, lines 16-19)) anticipate the “current extraction sections” (Office Action, page 2, line 17) and “current extraction plate” (Office Action, page 3, lines 5-7 (with reference to claim 2 as previously recited)) recited by the claims. However, the “substantially fluid impermeable plates” fail to disclose a number of claimed limitations.

First, there is no disclosure that the “substantially fluid impermeable plates” are “fixed to an end cell positioned on an end of the fuel stack,” as recited in claim 1. Neither the crude blocks depicted in Figs 1-4 for the “fuel cell stack,” nor elsewhere in the reference discloses that they are “fixed to an end cell positioned on an end of the fuel stack.” As discussed in this application, the recited positioning of, and other limitations on, the recited “current extraction plate” “improve[s] startup of the end cell . . . under cold conditions” (page 1, lines 34-35).

Second, there is no disclosure that the “substantially fluid impermeable plates” “extract the generated **current**,” as recited in claim 1. Although the Office Action asserts that page 12, line 13 – page 14, line 24 discloses “extracting the generated current” (Office Action, page 3, lines 6-7), no such function is disclosed for the “substantially fluid impermeable plates.” In the portion cited by the Office Action, it is disclosed that:

[a] fuel cell assembly typically includes a membrane electrode assembly interposed between a pair of substantially fluid impermeable plates. The membrane electrode assembly typically includes . . . two electrodes [which] each include a layer of porous electrically conductive material. . . . The plates may each have at least one open-faced channel formed in the surfaces thereof facing the membrane electrode assembly . . . assembled against the cooperating surfaces of the electrodes.

As illustrated above, Ballard only discloses the “substantially fluid impermeable plates” with respect to their function of directing reactant and coolant, and makes no disclosure that they “extract the generated current,” as recited. At best, this is disclosed as performed by the electrodes included in the “membrane electrode assembly.”

Although Ballard further discloses that the “[f]uel stack . . . includes negative and positive bus plates” 112, 114, 212, 214, 312, 314, 412, and 414 (see page 15, line 36 – page 16, line 4), there is no connection made between the “bus plates” and the “substantially fluid impermeable plates,” so as to conclude there is “a passage allowing flow of a fluid” (claims 1

and 5) provided for the disclosed bus plates or “enclosed cavity for confining fluid . . . in at least one of the current extraction sections” (claim 24). Additionally, there is no indication that the “bus plates” are “fixed to an end cell positioned on an end of the fuel stack,” as required by claim 1.

In Ballard, when combustion gas is supplied in the outermost coolant pathway of the fuel cell stack, the current extraction section deprives the heat of the combustion gas and the end cell because the current extraction section has a larger heat capacity than the separator, and then the current extraction section continues to deprive the heat from the end cell, and the temperature of the current extraction section is not increased because the outside air cools the current extraction section. In contrast, according to claims 1 and 5, the current extraction plate and the end cell is not directly cooled by the outside air because the current extraction section (including the current extraction plate and the end plate) has a passage allowing flow of a fluid. Thus, the temperature of the current extraction section (especially the contact part of the current extraction plate and the end cell) is rapidly increased, which prevents the current extraction section from depriving the end cell of heat.

Ballard relates to allowing a flow of a fluid in a flow passage provided for each single cell for the purpose of raising the temperature of the cell, and is not aimed at preventing the heat of the end cell from being deprived. Thus, application of the teachings of Ballard does not lead to “providing a passage provided for at least one of the current extraction plate and the end plate”.

As Ballard fails to disclose all of the recited limitations, it does not anticipate claim 1 under 35 U.S.C. § 102. The other independent claims, claims 5 and 24, recite limitations similar to those discussed above, and are distinguished over Ballard for essentially the same reasons as

claim 1. Dependent claims 2-3, 6-11, 19-23, and 25-27, are distinguished for at least the same reasons, and likewise are not anticipated under 35 U.S.C. § 102. Thus, Applicants respectfully request withdrawal of the rejections under 35 U.S.C. § 102.

Additionally, claim 24 recites “**an enclosed cavity** for confining fluid therein formed in at least one of the current extraction sections.” The Office Action incorrectly asserts that this is disclosed by page 5, lines 21-30 of Ballard, as although “[t]he coolant pathway may be fluidly isolated from each membrane electrode,” the *pathway* nevertheless provides an *open* path through the fuel cell, not “an enclosed cavity.” Thus, claim 24 and dependent claims 25-26 are further distinguished over the reasons discussed above with respect to claim 1.

**Rejections Under 35 U.S.C. § 103(a)**

In section 5 of the Office Action, claims 19 and 21 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Ballard. Applicants respectfully traverse.

As discussed above, Ballard fails to disclose all of the limitations recited in claim 5. Absent a demonstration as to how the above differences between what is claimed and the teachings of Ballard are obvious, the Office Action cannot sustain a *prima facie* case of obviousness under 35 U.S.C. § 103(a) against claim 5, or any of its dependent claims, including claims 19 and 21. Thus, Applicants respectfully request withdrawal of the rejections under 35 U.S.C. § 103(a).

In view of the above remarks, Applicants respectfully submit that the application is in condition for allowance, and respectfully request the Examiner’s favorable reconsideration as to allowance. The Examiner is invited to contact the Applicants’ representative listed below.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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